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Immunoassay-Based Microsensing

Background: Immunoassays are used widely for detecting substances due to the specificity and ease of using antibodies. These properties have lead to immunoassay application in a variety of diverse industries including as clinical diagnosis, food contamination, environmental surveying, basic scientific research, and drug discovery. Numerous improvements have been made to make antibody based detection more sensitive (ELISA, RIA, and the like) but sensitivity and detection of the antigen-antibody interaction limit utility. Also, current immunoassays have not been adapted to microscale successfully and still require relatively large, bulky equipment making portable applications nearly impossible.

Applications:

- *Improved sensitivity for clinical diagnosis.*
- *Detection of naturally occurring agents, antibiotics, microorganisms and pesticide residues in the food industry.*
- *Examination of various biological components found during environmental surveying.*
- *Detection of biological substances of interest in a sample for use in basic scientific research.*

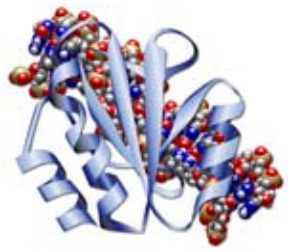
Advantages:

- *Significant increase in the sensitivity of detection, as little as 1 photon.*
- *Highly sensitive system that can be customized to incorporate combinational detection strategies.*
- *On site, rapid detection for use at the bedside and in the field.*
- *Small, portable with low power needs.*

The Technology: Researchers at the University of Arizona have developed a highly sensitive immunoassay-based microsensing system that can be customized to detect any substance which can be detected by an antibody. The UA system incorporates avalanche photodiode detection technology, immobilized antibodies on a chip surface and chemiluminescence to create a highly sensitive microscale system. This assay system eliminates the requirement for large instrumentation and enables superior sensitivity.

Lead Investigator: Jay Hoying Ph.D., University of Arizona

Status: Provisional Patent Application Filed; Work Ongoing at UA



Refer to Case # UA06-091

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